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SPECIAL ARTICLES

ANOTHER WORD ABOUT THE NORTHERN BOUNDARY OF MINNESOTA

IN examining a series of old maps of the "Hill records" of the Minnesota Historical Society, new light has been thrown on the northern boundary of Minnesota, as it was first proposed by the commissioners of the United States and Great Britain.

The first use of the term "most northwestern point of the Lake of the Woods" was in the proposed articles of a treaty of peace between the United States and Great Britain, November 25, 1782. The definition and the proposition came from Mr. Oswald, the British commissioner, who was in Paris in conference with the American Plenipotentiaries. It was adopted only five days later in the provisional articles of peace as signed and finally approved by both governments. It is the conclusion of that part of the section which defines the boundary line from Lake Superior to the Lake of the Woods. Mr. A. J. Hill has exhaustively discussed the complicated question which was raised by the attempt to extend the boundary "thence on a due west course to the river Mississippi": this interesting and long-drawn discussion, with the various phases of diplomacy which the error in the treaty entailed, is published in the appendix of Vol. VII. of the Collections of the Minnesota Historical Society. Mr. Hill also gives the steps taken by the two governments to determine the exact location of that point, but records his belief that the place contemplated by the treaty of 1783 was at the outlet of the Lake of the Woods, that is, at Rat Portage. This belief he based on the shape of the lake as represented on the "Mitchell map" used by the joint commission when they drew up the terms of the treaty. The sagacity of this opinion is fully demonstrated by the designations on an English map which I have recently had the opportunity of examining, through the courtesy of Hon. N. P. Langford, president of the Historical Society. This map was published in London, in 1794, by Laurie and Whittle, 53 Fleet Street. Therefore its

date was between the signing of the first treaty and the discovery of the fact that the Mississippi did not rise so far north as the Lake of the Woods. It was evidently an important map, covering a large area and extending from Spain westwardly to a meridian in the Pacific 25 degrees west from Cape Mendocino, and from the equator to Hudson's Bay. It has no individual title nor author's name. It seems to have come from an atlas, on the cover of which the date and the publisher's name are expressed. I have not seen the whole atlas, and these details are on the authority of Mr. Charles A. Heath, of Chicago, who owns the map.

I was at once struck by the fact that the international boundary, which is distinctly shown by a heavy red line, does not follow the route for canoes which was finally settled upon as the boundary. At Saganaga Lake it runs toward the northwestward instead of southwestward, thus passing to the north of Hunter's Island, following the course of drainage from Saganaga Lake. In order to take a canoe southwestward from Saganaga Lake it is necessary to make a short portage into Oak Lake, and thus to put the canoe into a different water-course. Dr. U. S. Grant has called attention to this departure from the real water-course and to the consequences resulting in loss of territory to the United States, in a paper published in the eighth volume of the Collections of the Historical Society. He has also mentioned several other instances of portaging from the direct and usual route to other waters lying to the south; and Dr. A. N. Winchell, in his article in Vol. VIII. of the same publication, has given the history of the negotiations which resulted in the present boundary line.

What is singular is, not that the red line of the map invariably follows the regular and continuous water-course after leaving Saganaga Lake, as far as to Rainy Lake, but that it strikes the north end of Rainy Lake, and thence passes to the north end of the Lake of the Woods, at the outlet of that lake. It thus puts within the territory of the United States the whole of Rainy Lake, and the most of the Lake of the Woods.

On comparing this map with other old maps that were gathered by the late A. J. Hill, it becomes apparent not only that there are two "water" routes all the way between Saganaga and Rainy Lakes, but also two water or canoe routes between Rainy Lake and Lake of the Woods. These two routes are shown, in whole or in part, by the following maps:

1743. *Carte de l'Amérique septentrionale pour servir à l'histoire de la Nouvelle France. Par N. B. [Bellin?], Ing. du Roy et Hydrog. de la Marine.* On this map, westward from Lake Superior, are three water routes, which, notwithstanding the incorrectness of the map, can be identified as well known hydrographic features. The most northern is that which starts from Thunder Bay, ascending the Kamanistigouia River, and may be known distinctively as the *Kamanistigouia route*. It is represented as a nearly straight water-course, of which the east end flows east and the west end west. It has three connections with the more southern route, all leading to Rainy Lake, but it continues on westward and joins a stream which is represented to flow into "Lac des Bois" from the north. The next southern route (the *international boundary*) divides at Saganaga Lake. The northern branch unites with a stream that leads to the northeast corner of Rainy Lake. The southern branch, running along the south side of Hunter's Island, continues to Rainy Lake, joining it from the east. The most southern of the main routes mentioned is that which leaves Lake Superior at its most western point and is evidently meant to be that by way of the St. Louis River. It unites with the international boundary route westward from Lake Saganaga, evidently by way of the Vermilion River. Westward from Rainy Lake are two water-courses, one passing northward into the Kamanistigonia route, and the other westward, by way of Rainy River, and joining Lake of the Woods near its middle, amongst islands, from the east. The southern portion of Lac des Bois, which receives several streams from the south, is very inconsequential. This portion was afterwards known as "Lake of the Sand Hills."

1755. *Partie de l'Amerique septentrionale qui comprend la Nouvelle France ou le Canada. Par le Sr. Robert de Vaugondy, Geog.* The only route westward from Saganaga Lake, shown on this map, runs north of Hunter's Island, the southwestern route, where the actual boundary runs, being discontinued after passing through two lakes. This northern water-course unites with the northwest side of Rainy Lake, apparently by way of the Seine River. The routes westward from Rainy Lake are (a) the Rainy River and (b) a river route which has a curious course, reaching "Lac des Bois" from the northeast, thus enclosing a large island between Rainy Lake and Lake of the Woods. This northern route is simplified in later maps.

1755. *Carte de l'Amerique septentrionale depuis le 28 Degré de latitude jusqu' au 72. Par M. Bellin, Ingenieur de la marine.* By this map there are two water routes westward from Lake Superior. The most northern is that which may be known as the *Kamanistigouia route*, starting from Thunder Bay. The other is the Pigeon River route which is now the international boundary. It is an interesting fact that at Saganaga Lake this southern route branches, one branch going to the north of Hunter's Island and joining the Kamanistigouia route at a lake some distance east of Rainy Lake, thence the united routes joining Rainy Lake at the east side. The southern branch, which became later the international boundary, joins Rainy Lake from the southeast. Westward from Rainy Lake there is shown but one route, plainly that of the Rainy River, though it is represented to unite with Lake of the Woods in the northern portion of that lake instead of in the southern.

1762. *Canada, Louisiane, Possessions Angl. Par le S. Robert de Vaugondy, Geog. ord. du Roy, etc.* This map shows two through routes to Rainy Lake, of which the northern is that by the Kamanistigouia and enters that lake by the Seine River. The southern divides into two branches, of which the northern starts from Saganaga Lake and unites with the *Kamanistigouia route* at a lake east of Rainy Lake, and the southern continues through a

series of lakes, now the international boundary, to Rainy Lake. There is but one route westward from Rainy Lake to Lake of the Woods, that being by the Rainy River.

1776 (?). *An accurate map of Canada, with the adjacent countries, exhibiting the late seat of war between the English and French in those parts.* Univ. Mag. J. Hinton, Newgate Street. This English map was certainly made between the dates of the cession of Canada to England and the close of the Revolutionary war, although its exact date is not known. It shows two routes of water travel westward from Lake Superior. Of these the northern is that by way of the Kamanistigouia River, passing through "Long Lake" and "Flat Lake." The southern route is by way of the Pigeon River to Lake "Sesakinaga" at its north end, and from that lake northwestwardly, evidently along the north side of Hunter's Island.

1775. *North America, from the French of Mr. d'Anville, improved with the English surveys made since the Peace.* London. "Printed for Robert Sayer and J. Bennett, Map and Print sellers, No. 53 Fleet street, as the act directs 10 June 1775." This map shows three routes to Rainy Lake, viz.: (a) The Kamanistiquoia route, passing through the "Long Lakes" at some distance inland. (b) The international boundary route, passing through "Long Lakes" near Lake Superior, leading to Saganaga Lake and there dividing, like other maps, one branch going northwest and the other southwest. Of these the northern branch only reaches Rainy Lake, the other apparently being discontinued or blending into (c), the third main route, which follows the St. Louis River northwestwardly, uniting with the chain of lakes of the present international route. Westward from Rainy Lake only the route via Rainy River is shown.

1780 (?). *A chart of the interior part of North America, demonstrating the very great probability of an inland navigation from Hudson's bay to the west coast.* The date of this map is uncertain. It is very generalized and its only value in this connection is its naming the "Back Road" between Rainy Lake and

Lake of the Woods. This name is applied to the only water course between those lakes but is a term which afterwards was given only to the more northern route of canoe travel between them.

1790. *A map showing the communication of the lakes and the rivers between Lake Superior and Slave Lake in North America. Gentleman's Magazine, 1790.* Plate 1. This generalized map is valuable in this connection only because it shows two conspicuous watercourses leading westward from Rainy Lake to Lake of the Woods. Eastward from Rainy Lake the single water route is that which leads to the "grand portage" from Pigeon River to Lake Superior.

1826. *Map of the Missouri and higher parts of the Mississippi, and of the elevated plain where the waters divide, which run eastward into the River St. Lawrence, northeast into Hudson's Bay, north-northwest into the frozen sea and south into the Gulf of Mexico; to which is added Mackenzie's track in 1789.* From Lake Superior westward is shown but one water route, which is apparently that of the international boundary, consisting of many small lakes and short streams between them, as far as Rainy Lake. But westward from Rainy Lake are two water routes, one plainly the Rainy River route joining Lake of the Woods from the southeast, and the other running directly from the northwest corner of Rainy Lake northwestwardly to Lake of the Woods, considerably shorter than the southern route.

[*Note.*—This is the map compiled by Gen. Collot to accompany his travels in North America, 1794–96. It was engraved in 1805 and the book printed, but not published till 1826.]

1830. *United States of America, compiled from the latest and best authorities, by John Mellish.* The route here represented is that of the international boundary, through Rainy Lake and to the northern end of Lake of the Woods, where the outflow is to Lake Winnipeg. But from the northwest corner of Rainy Lake another water-course is shown, entering Lake of the Woods from the east about mid-

way. The land thus surrounded by water is named *Maple Island*.

1860. *Map of the boundary line between British America and the United States.* Accompanying Hind's report on the Assiniboine and Saskatchewan Exploring Expedition. London Edition. This map shows excellently not only the international boundary route but also the more northern water route along which the body of water flows from Saganaga Lake to Rainy Lake, west from which the margin cuts it off.

1860. *Map of the country from Lake Superior to the Pacific Ocean.* Accompanying Hind's report on the Assiniboine and Saskatchewan Exploring Expedition. London Edition. While showing the same two routes as the last mentioned map, this shows the two routes that lead from Rainy Lake to Lake of the Woods.

Several later Canadian maps plainly delineate the routes of canoe travel between Lake Superior and Lake of the Woods, viz., Dawson's and the maps of the Geological Survey.

Conclusions. It is plain, therefore, that the proposition of the British commissioner (Oswald) was designed to carry the international boundary to the outlet of the Lake of the Woods and thence "westward to the Mississippi."

It is plain also that in London the British geographers so understood the terms of the treaty of 1789, and further that the line was to leave Lake Superior at "3 Rivers," *i. e.*, at the mouth of *Kamanistigouia River*.

It was then supposed, and is now demonstrated, that westward from Lake Saganaga, nearly all the way to Lake of the Woods, there are two canoe routes of travel which unite in the same waters only in passing through Rainy Lake, the northern route carrying the main water-flow eastward from Rainy Lake, and the southern one westward from that lake.

In order to reach the most northwestern point of the Lake of the Woods by the most direct route it would obviously be necessary to follow the more northern of these routes all the way to Rainy Lake and there depart

from it, as shown by the map of Laurie and Whittle, of 1794, to take a shorter route northwestwardly to the northern part of Lake of the Woods.

It is also now plain that the provisional determination of the point of the most northwest angle was very carelessly and incorrectly done, and ought not to have been accepted by the United States.

When the Webster-Ashburton treaty of 1842 accepted that point, thus determined, and defined the boundary by specifying certain lakes through which the line should run, further uncertainty and controversy were cut off.

There was a constant tendency to shift the flexible boundary line farther and farther toward the south. This is probably attributable to the guidance of the Canadian *voyageurs*, who were the only men acquainted with the region and who were then British subjects.

In the removal of the boundary from the original route along the main water-course to its southern course, Dr. Grant has estimated the loss of land by the United States to be about 1,000 square miles, eastward from Rainy Lake.

Westward from Rainy Lake is an area of excellent agricultural land along both sides of the Rainy River, embraced within the limits of the glacial Lake Agassiz. If the original intent of the treaty of 1783 had finally become effective in the treaty of 1842, about 1,000 more square miles would have been embraced within the United States, the greater part of which is flat and arable at once on the removal of the forest.

Again, if the boundary had left Lake Superior at "3 Rivers," as indicated on the accompanying map of Laurie and Whittle, a still further large area, which may be estimated at 500 square miles, would have fallen to the United States.

Finally, it is plain that through the inadvertence of the American commissioners of 1842 about 2,500 square miles of land were yielded to the British commissioners, more than was contemplated by the original treaty—that, too, while they were very tenacious, in

following the instructions of the president, *not to grant any cession of land from the territory of the United States.*

The only comfort which can be derived from this *crying over spilt milk* is that relief which comes with a gush of tears, and from the satisfaction of remembering "what might have been."

N. H. WINCHELL

MINNESOTA HISTORICAL SOCIETY,

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REGENERATION AND THE QUESTION OF "SYMMETRY IN THE BIG CLAWS OF THE LOBSTER"

IN view of several recent articles¹ on the phenomena of symmetrical chelæ in the lobster it seems desirable to offer a few further considerations on the subject of the origin of such structures.

Let us briefly present the nature of the problem. It is a matter of common observation that in the adult lobster the "great" claws are almost invariably asymmetrical with reference to each other; the claw on one side of the body being a "nipper" and the other a "crusher." In a few cases, however, a variation from this normal asymmetry has been discovered, in which the claws instead of differing from each other are very much alike and symmetrical in form. These variations fall into two categories: First, those in which both claws are of the nipper type, and second, those in which the similar claws are both crushers. Two theories for the origin of these relations of symmetry have been presented—first, that they are predetermined in the egg, and second that they may arise through regenerative processes and consequently, are not of necessity wholly determined by congenital factors. Let us consider first the variations from normal asymmetry.

I. *Explanations for Abnormally Symmetrical Claws.*

(a) *Similar Nipper Claws.*—Until very recently in all the authentic cases of similar chelæ, the claws belonged to the first category of the nipper type. Out of over 2,400

¹ See especially: (1) Herrick, F. H., 1907, "Symmetry in the Big Claws of the Lobster," SCIENCE, Vol. XXV., p. 275. (2) Calman, W. T., 1906, in the "Proceedings of the Zoological Society of London," p. 633.

lobsters² found only three had similar claws. In an examination of some 600 specimens as they came in from the traps at the Experiment Station of the Rhode Island Commission of Inland Fisheries the writer³ found only one lobster with both claws alike. The similar claws of these four cases were all nippers. Theoretically, it may appear quite plausible that a symmetry of this character might be congenital in origin. For in the early development of the lobster both chelæ are alike and similar to the nipper type. At about the sixth stage⁴ normally one of the claws begins to differentiate into a crusher. We might thus have an adult lobster with two nipping claws because they had failed to differentiate in the usual asymmetrical manner. On the other hand, the writer has elsewhere⁵ furnished evidence that this type of symmetry may also be brought about as the result of a process of regeneration.

(b) *Similar Crusher Claws.*—With regard to this second category, however, the congenital theory does not appear to apply so readily. For in this case the development must be conceived as starting in the normal way, and then instead of differentiating asymmetrically both chelæ have passed beyond the normal stages and developed into two crushing claws of the phylogenetically later (according to Stahr⁶ and Przibram⁷) type.

² Herrick, F. H., 1895, "The American Lobster," Bull. U. S. Fish Commission.

³ Emmel, V. E., 1907, "Regenerated and Abnormal Appendages in the Lobster," thirty-sixth annual report of the Rhode Island Commission of Inland Fisheries, special paper, No. 31.

⁴ Hadley, P. B., 1906, "Changes in Form and Color in Successive Stages of the American Lobster," thirty-fifth annual report of the Rhode Island Commission of Inland Fisheries, Special paper No. 19.

⁵ Emmel, V. E., 1906, "Torsion and other Transitional Phenomena in the Regeneration of the Cheliped of the Lobster," Journ. of Exp. Zoology, Vol. III., No. 4.

⁶ Stahr, H., 1898, "Neue Beiträge zur Morphologie der Hummerschere Jena," Zeitschr. f. Naturw., Bd. 32.

⁷ Przibram, H., 1901, "Experimentelle studien über Regeneration, I.," Archiv. f. Entw.-Mech., Bd. XI.